

# VIRGINIA WILDLIFE

JUNE, 1955



VOLUME XVI    *Price 15 cents*    NUMBER 6



USFWS photo

### Big Game

The black bear is increasing in value as a fine trophy animal. There were 270 legal bruins taken in Virginia during the 1954-55 hunting season.



# Virginia WILDLIFE

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, Richmond 13, Virginia

*A Monthly Magazine Dedicated to the Conservation, Restoration, and Wise Use of Virginia's Wildlife and Related Natural Resources, and to the Betterment of Hunting and Fishing in Virginia*

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### *In This Issue*

	PAGE
Editorial . . . . .	4
Federal Laws for the Protection of Birds . . . . .	5
Surf Fishing . . . . .	8
Research . . . . .	11
Shall We Outlaw the Rifle? . . . . .	13
Boy Scouts Improve a Farm for Wildlife . . . . . (Pictorial)	14-15
Game Management Fundamentals . . . . .	16
Fish Conservation Fundamentals . . . . .	18
The Wild Turkey in Virginia . . . . .	20
Winners of the 8th Annual Wildlife Essay Contest . . . . .	23
Drumming Log . . . . .	24
Field Force Notes . . . . .	26
Wildlife Questions and Answers . . . . .	27
Back Cover—Some Common Bass Foods . . . . .	28

### Cover

A boiling surf and clear ocean air lessens the tension on tired nerves and makes surf fishing an enjoyable experience. If the fish are inshore, fishing is often fast and furious.

H. Armstrong Roberts photo

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## MARSHALLING OUR RESOURCES FOR FREEDOM

IF we may be at liberty to use the overworked adage, to be forewarned is to be forearmed, it might be well to comment on the work being done by the Industrial College of the Armed Forces in its current series of conferences on national resources. The latest of these two-week sessions was held at the University of Pennsylvania in Philadelphia on April 25 - May 6 and it was your editor's privilege—along with 150 other military reservists and a like number of civilians—to be one of its conferees.

The special conference is offered annually in 16 cities, is vital in purpose as the country's defense and is designed to rehearse the industry-government-military team in the means for immediate mobilization of men, materials and production in the event of national emergency.

According to the latest information assembled at the Conference, "These are times filled with peril. Indecision stalks Western Europe. The fuse may already burn in Asia. The Kremlin can be held off only by strength. Aggression could strike overnight, suddenly, disastrously across vast distances at continental United States. America must be ready. It can be if industry, other key civilian forces and the military are made ready—together."

The repeated warning sounded at this conference, however, is not new to the readers of this magazine. Since its postwar appearance in 1946 *Virginia Wildlife* has been preaching the gospel of conservation and resource preparedness each month. The idea of the wise use of our life's supporting resources—soil, waters, plantlife, animal life, and minerals—is something still few people appreciate, much less put in practice, and it is for this very reason that the magazine was redesigned, broadened, and established on a long-range basis.

We are told by the military experts at this conference that no nation can long remain free by just hoping for freedom. Hope alone has not been sufficient to keep the light of liberty burning in any people. There must be strength and there must be resolution. Strength stems from natural resources, and resolution from the minds and will of a free people to put their genius to work.

To all this we say *Amen*. Have we not said so in our humble way in *Virginia Wildlife* before? Have we not said that society—if it is to be a free society—must rest its case on a bedrock of natural resources, and that society through ill-chosen or ill-directed efforts can destroy itself through destroying its resource base?

History down through the ages clearly shows that where people have failed to take care of their natural wealth they have failed to survive. America, too, can become a

"have not" nation if we fail to safeguard the very things which have made us great. No human activity in free America is so important as the effort to so manage natural resources that they will benefit the greatest number of people for the longest time without impairment to the future supply.

It is this concept of conservation, so well mentioned but insufficiently stressed at the conference, that we must get across to more Americans or risk the chances of losing out to an aggressor who has had more prudence than we to take care of his resource base.

We might point out, too, that time is now when we must soft-pedal the idea of continued exploitation and put the emphasis more where it belongs—on restoration, reconstruction, and rehabilitation.

It is time we faced about and reoriented our education toward the process of engineering a free and enduring society based upon conservation concepts.

The ICAF national resources conferences are on the right track and with more emphasis on ways and means of conservation could render the country an even greater service.

We heartily endorse these conferences to all who can attend, be they associated with the military, government or industry.

Future conferences are planned at the following places:

Austin, Texas	16 May - 27 May 1955
New York City, N. Y.	16 May - 27 May
Worcester, Massachusetts	6 June - 17 June
Houston, Texas	19 Sept. - 30 Sept.
Detroit, Michigan	26 Sept. - 7 Oct.
Santa Barbara, Cal.	17 Oct. - 28 Oct.
Portland, Oregon	24 Oct. - 4 Nov.
Miami, Florida	28 Nov. - 9 Dec.
Ogden, Utah	28 Nov. - 9 Dec.
Mobile, Alabama	16 Jan. - 27 Jan. 1956
Berkeley, Cal.	24 Jan. - 4 Feb.
Shreveport, La.	13 Feb. - 24 Feb.
Jackson, Miss.	13 Feb. - 24 Feb.
Savannah, Georgia	12 March - 23 March
Waco, Texas	12 March - 23 March
Des Moines, Iowa	9 April - 20 April
Chicago, Illinois	16 April - 27 April
<b>Richmond, Virginia</b>	<b>14 May - 25 May, 1956</b>
Buffalo, New York	21 May - 1 June

Those interested can obtain further information by writing the Commandant, Industrial College of the Armed Forces, Fort McNair, Washington, D. C.—J. J. S.



# An Explanation of the Federal Laws for the Protection of Birds

By FREDERICK C. LINCOLN  
*Biologist, Office of the Director  
U. S. Fish and Wildlife Service*

(USFWS and Game Commission photos)

THE Convention between the United States and Great Britain for the protection of migratory birds in the United States and Canada was signed at Washington, D. C., on August 16, 1916. The plenipotentiaries signing this document were American Secretary of State Robert Lansing and British Ambassador Cecil Spring Rice. Ratifications of the two countries were exchanged on December 7, and the Convention was proclaimed by President Wilson on December 8, 1916. At the time this Convention was negotiated and ratified, Canada did not have her present treaty-making powers which explains why it is correctly referred to as the Convention between the United States and Great Britain.

To give it effect, Congress passed the Migratory Bird Treaty Act which was approved on July 3, 1918. The constitutionality of the Treaty and of this Act was upheld by the Supreme Court in a decision rendered on April 19, 1920. An Act of the Canadian Parliament approved August 29, 1917, gave full effect to the Convention in Canada and this was upheld by the Supreme Court of Prince Edward Island at the Michaelmas term in 1920.

The Convention between the United States and the United Mexican States for the protection of migratory birds and game mammals was signed at Mexico City on February 7, 1936, the plenipotentiaries being Ambassador Josephus Daniels and Mexican General Eduardo Hay.



The Canada goose, a protected and highly prized game bird in Virginia.



This refuge furnishes food as well as protection for these ducks (mostly mallards).



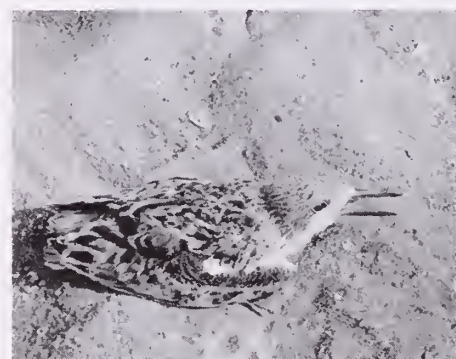
Whooping cranes down to 21 birds rigidly protected and fighting for survival.



Two coots walking on the water in characteristic phase of take-off.



This sora and other rails are covered by the Migratory Bird Treaty Act.



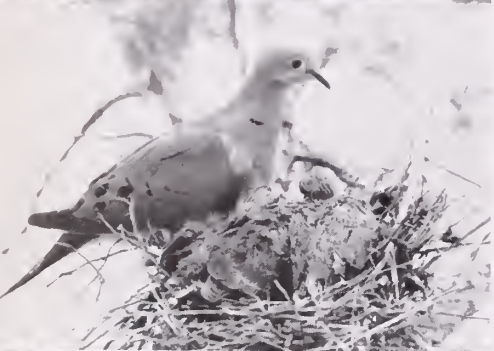
A young black skimmer, the only one of the skimmers found in United States waters.



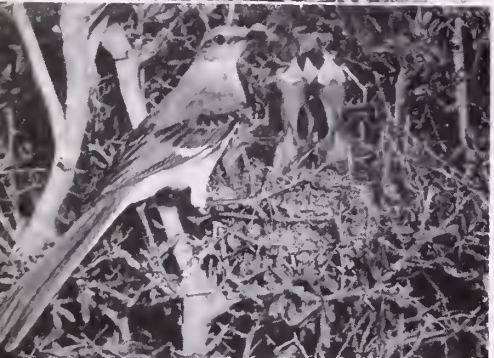
A lesser yellowlegs common on Virginia's Eastern Shore.



The woodcock more common to the New England states but found in Virginia.



An adult mourning dove and young listed as a migratory game bird in this state.



A mockingbird family. The adult is extremely aggressive in defense of its nest.



The red-eyed vireo builds a sturdy nest and consumes large numbers of insects.



A chuck-wills-widow almost perfectly camouflaged in the sticks and leaves.

This Convention was duly ratified by the participating countries and the ratifications were exchanged in Washington, D. C., on March 15, 1937. It was proclaimed by President Roosevelt on the same day. To cover the additional provisions of this Convention, the Migratory Bird Treaty Act was amended by an Act of Congress approved on June 20, 1936.

Article I of the Convention with Great Britain provides that: "The high contracting powers declare that the migratory birds included in the terms of this convention shall be as follows:

#### 1. Migratory game birds:

- (a) Anatidae or waterfowl, including brant, wild ducks, geese, and swans.
- (b) Gruidae or cranes, including little brown, sandhill and whooping cranes.
- (c) Rallidae or rails, including coots, gallinules, sora and other rails.
- (d) Limicolae or shorebirds, including avocets, curlews, dowitchers, godwits, knots, oyster catchers, phalaropes, plovers, sandpipers, snipe, stilts, surf birds, turnstones, willets, woodcock, and yellowlegs.
- (e) Columbidae or pigeons, including doves and wild pigeons.

2. **Migratory insectivorous birds:** Bobolinks, catbirds, chickadees, cuckoos, flickers, flycatchers, grosbeaks, humming birds, kinglets, martins, meadowlarks, nighthawks or bull-bats, nut-hatches, orioles, robins, shrikes, swallows, swifts, tanagers, titmice, thrushes, vireos, warblers, wax-wings, whippoorwills, woodpeckers, and wrens, and all other perching birds which feed entirely or chiefly on insects.

3. **Other migratory nongame birds:** Auks, auklets, bitterns, fulmars, gannets, grebes, guillemots, gulls, herons, jaegers, loons, murres, petrels, puffins, shearwaters, and terns."

It will be noted that under item 2 of Article I as quoted, there is no listing of all species that are known to be migratory, although some members of their respective families are named. For example, bobolinks, meadowlarks and orioles are named, but there is no reference to the several species of blackbirds which belong to the same family and which are definitely migratory between Canada and the United States. Similarly, grosbeaks are only group of this great family that are covered in this Convention. Most of the rest of the species in this family have the word "sparrow" as a part of their names and it is interesting to recall that at the time the Convention was under negotiation, the English or European House Sparrow was more or less of a nuisance in large areas of both the United States and Canada. It was accordingly feared that the success of the Convention might be endangered if any birds known as "sparrows" were included. Another family that is represented in the



Canadian Treaty by but a single species is the Mimidae, of which the Catbird is the only one named, there being no reference to the Brown and other thrashers or to the Mockingbird.

To cover more adequately the entire field, the Convention with Mexico merely divides the protected birds into migratory game birds and migratory non-game birds, and in each category only the family name is given. This is done in Article IV and it has been ruled that any species belonging to one of the named families, and which is found in both the United States and Mexico, is automatically protected by Federal law. This is possible for the reason that this Article states that: "The high contracting parties declare that for the purpose of the present convention the following birds shall be considered migratory:" then proceeding to name some 31 families. In other words, the Convention does not say that the birds will be covered *if* they are migratory, but that they shall be *considered* migratory. This action brought most of the important family of Fringillidae, consisting of the grosbeaks, sparrows and finches, under the Migratory Bird Treaty Act, and in addition, many other species that are common in many parts of the United States at one season or another, but which do not occur in Canada. The total number of species now protected under the Federal law is 481.

In 1940 the Congress passed an Act for the Protection of the Bald Eagle, to assure preservation of this bird which had been adopted as the national symbol by the Continental Congress in 1782. It is displayed emblematically on the coat of arms and on the Great Seal of the United States. It is, however, the only member of the family to come under Federal protection. As passed by Congress the Bald Eagle Act specifically excepted the Territory of Alaska and for many years these birds were killed there as a result of a bounty placed upon them by the Territorial Legislature. In 1952 the Secretary of the Interior, acting under authority contained in the Alaska Game Law, as amended, adopted a regulation which prohibited any person in Alaska from possessing or transporting a Bald Eagle within the Territory without a special permit. This had the effect of nullifying the Bounty Act which was then repealed by the Territorial Legislature on March 2, 1953 (Chap. 11, Session Laws of Alaska, 1953).

There are, of course, many other migratory birds that are not covered by the Federal laws. Usually, however, they are protected by the laws of the several States, many of which have on their statute books, a law patterned after what is frequently termed "the model Audubon law." In such laws all birds are protected except a named few which generally include the Crow, Starling, English Sparrow, Great Horned Owl and two or three hawks. Unfortunately, the unprotected hawks are rarely killed by the average hunter or farmer and it is the beneficial species, the "living mouse traps," that usually suffer.

The ruby-throated hummingbird, one of over five hundred protected species found in the eastern U. S.



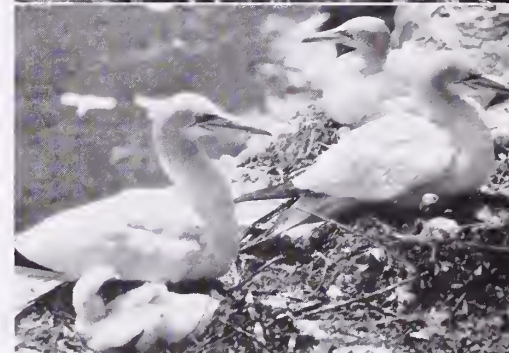
Black-capped chickadee young still displaying their natal down.



The great white egret, a large and showy bird once killed for its plumage.



The bird world's champion high diver is the gannet. There are reliable reports of birds becoming caught in fishermen's nets ninety feet under water.



Shore birds like this flock frequently follow ships along Virginia's Eastern Shore.



This royal tern colony seem a bit overcrowded but the parents miraculously are always able to feed the right offspring.



*Some Primary Pointers on the Techniques and Thrills of*

# SURF FISHING

By WINSTON MONTAGUE

**F**EAST OR FAMINE, they call it, and this description pretty well sums up most surf fishing. The fishing is usually very slow or fast and furious. Sometimes for hours on end nothing happens and then suddenly the action will get very fast indeed. It is for those periods of fast action that the real surf fishermen will often spend hours of inactivity. Yet few indeed are the fishermen who have caught worth while fish in the surf who do not become surf enthusiasts and thereafter follow the call of the surf whenever and wherever they can.

What is the quarry a man seeks when he goes down to the edge of the sea and casts his line into the surf? That depends somewhat on where the casting is done. If the fisherman lives in Massachusetts, he no doubt hopes to catch a striper, or rockfish, as we call them in Virginia. Should he stand on the beach at Jensen, Florida, no doubt his hope is for a nice bluefish or perhaps a pompano, one of the most delectable of all salt water species. But if the fishing be done in Virginia or North Carolina, as most of it undoubtedly will be done by those who read this, then the prime quarry is usually a channel bass, or drum, as we of Virginia most commonly speak of it. While the drum is the largest game fish the Virginia or Carolina angler will seek in the surf, there are many who will concentrate their activities on fighting bluefish. There are some who will hope for rock but this fish is seldom caught by the surf casters of the Old Dominion or the anglers of Carolina. True, thousands of rock are caught in the great tidal rivers of these two states, in the Chesapeake Bay and in the many great Sounds of the Carolina coast but with the exception of some little fishing for stripers in the Virginia surf in the Chincoteague and Assateague area there is little surf fishing for these great game fish in our area.

Kingfish, often called sea mullets or round heads, are almost always present in our waters during the surf fishing season and flounders are also usually there to be caught by those who know how to catch them. Trout are picked up quite frequently and spot can almost always be taken by those who use small hooks and little baits. In addition to these desirable fish there are certain times of the year when it is very difficult to avoid catching a skate, especially down on some parts of the Carolina

coast. Not meaning to put all of the skates, which are a nuisance, in North Carolina it might be added that at certain seasons there are more than a plenty of them to annoy the anglers on our own Virginia coast.

Larger fish which most fishermen do not want to catch are big sting-rays and sharks. A big sting-ray is something most fishermen definitely do not want but they are very powerful and if you are new at the surf fishing game a fifty or seventy-five pound ray can give you quite a thrill before it is beached.

Fishing the coasts of Virginia and Carolina you might sometimes pick up a fish of another species but those named cover the kind usually caught with the exception of the fact that in Carolina they frequently get mackerel in the surf. Sometimes on the Carolina coast they will tangle with a tarpon but that is definitely in the unusual class. They do get quite a few pompano in the Carolina surf at certain seasons and perhaps they could be caught in Virginia waters if anglers here made a real try for them. Blow toads are also caught in the surf but are not classed as game fish though it is one of the finest of all fishes from a culinary viewpoint.

If you are not versed in the lore of surf fishing you will want to know what are the tools of the surf fishermen; what baits are used and when and where the fish are caught.

A surf rod is almost a necessity. You can fish the surf with a small casting rod when water conditions are ideal and the fish are small but it definitely is not the rod for every-day surf fishing. A surf rod can be one of the fine rods from the sporting goods stores with a seven, eight or nine foot tip and a thirty-six inch butt or it can be a homemade Calcutta rod but it must have enough length to cast at least a two inch pyramid sinker some distance out into the water. If the water is not quiet, and it seldom is, you will probably fish with a four or five ounce sinker. That is when you will find out that your ordinary casting rod like you use in a mill pond is strictly not the thing for that type of fishing.

The present tendency is towards lighter surf rods than those used some years back but whether your rod be heavy or light it must have the length and backbone to cast two to five ounces of lead out beyond the waves to the spot where the fish may be. Surf spinning rods are



getting increasingly popular but with them it is not necessary to use as much lead as is used with tackle using conventional linen line, for there is much less water resistance to the lighter monofilament and you can therefore hold bottom with less sinker. However, if you get a thirty pound or so channel bass on one of them as I did at Hatteras last fall you may well wonder whether or not your tackle is heavy enough. I found out to my sorrow that mine was not for the way I handled it. I lost my fish with a broken line (eight pound test) when the fish was almost at my feet and I thought it was licked.

The choice of reels depends somewhat on the rod you use. Most men use a salt water reel with the conventional star drag. The usual outfit has a reel holding from one to two hundred yards of line, with a hundred and fifty yards a plenty for most fishing. Line may be linen or nylon. The smaller the line the less water resistance and this means you can use a smaller sinker, which is often desirable. There are few rocks on the Virginia or Carolina coasts so a pyramid sinker is almost the universal choice of the surf fishermen in our area. This bites in and holds better than other types. A wire leader is not a necessity but will save many a fish and rig. The size and type of hooks depend on what kind of fish you are trying to catch. Many men fishing for channel bass pass up much good sport by not using hooks small enough to catch blues and other fish and baits which might attract these lesser species. Two hooks can be used and smaller fish taken while waiting for a strike on the larger bait.

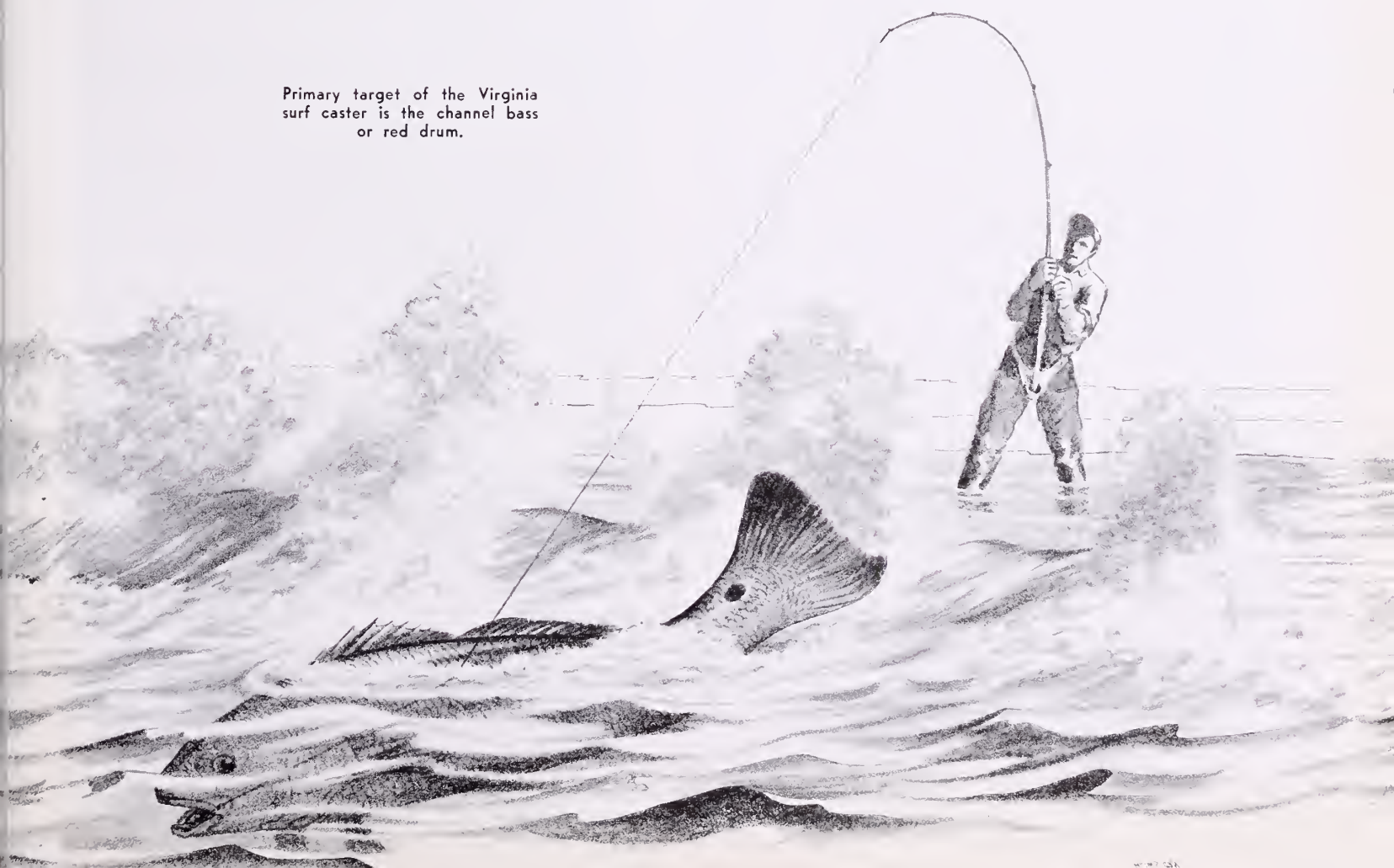
The surf fisherman should have a sand pike to hold

his rod while baiting up and resting between bites. Never let your reel lay on the sand unless you want to ruin it. The sand pike will save a lot of worry and wear and tear on the reel.

You should have a good pair of pliers, plenty of sinkers of assorted sizes, fish finders and swivels for rigging up your hook and line, some extra wire for leaders, a gaff in case you get a large fish, and an assortment of hooks. You will find a folding chair very useful though not essential. A tackle box or surf bag is almost essential and sunburn lotion and dark glasses will come in handy. Thus equipped you should be ready for action except for the little matter of bait.

If you use artificials fresh bait will not worry you but almost every surf angler in Virginia and Carolina uses some form of bait other than artificial. On the Virginia coast the channel bass fishermen like bunkers (or menhaden, if you prefer that name), peeler crabs, squid, clams and mullet. Down on the Carolina coast they fish almost altogether (that is, the bait fishermen) with mullet and bunkers. For bluefish bunkers and mullet are fine and these baits will also catch trout, flounders, kingfish and other surf species. Squid is also good and so are peelers though I have never seen peelers used on the Carolina coast. Down there shrimp are quite popular for the smaller fish. Of course, you can also use bloodworms and other baits if you prefer them. Live minnows are especially good for flounders, incidentally, and sand fleas are tops for pompano. Live minnows will also catch lots of other fish, including toads, as I found out last year at Hatteras Inlet.

Primary target of the Virginia surf caster is the channel bass or red drum.





Many fishermen consider the channel bass the prize catch from the surf. These two fishermen are getting results.

Where to fish is best learned by experience. There are places on the beach where you are wasting your time fishing and there are other spots which have been good for years though often the fishing places may change with each good storm. Generally speaking in Carolina and Virginia you fish the sloughs, which are deep water channels running along the beach, and fish the bars near the surf. Around an inlet is almost always good. You can usually spot the holes or sloughs at low water and they almost always produce good fishing at some stage of the tide.

As for the time to fish it is generally better early in the morning and late in the evening during the warmer months. My experience has been that the fishing is best from about an hour before flood tide to an hour or so after the tide has turned and if I can catch this time about sundown so much the better, especially in the summer. Some say you cannot catch fish unless your hook is in the water and there is much to this but if you are fishing at the right time your chances are certainly better. At dawn and just before dark is almost always good during the warm months and many men swear that after dark is the best of all. This time is not as popular in Virginia as it is in Carolina but unquestionably the fish do come to the beach at dark and if more men fished after dark they would probably have better luck.

For specific spots in Virginia you might try Assateague or Chincoteague Islands to the north or Wreck Island and Cobb Island in the Oyster (the name of an Eastern Shore town) vicinity. These are famous places. Most of the better known places are on the Eastern Shore of Virginia but from the Sand Bridge development below Virginia Beach on south to the North Carolina line there is much good water for surf fishing. It is difficult to get to unless you have a beach buggy or jeep but there is plenty of fishing water down there and good fish to be caught. If they ever open up the proposed toll road from Norfolk to Nag's Head they will open up much fine territory to the surf fisherman.

In North Carolina there are many famous surf fishing spots which are in the main more easily reached than our fishing places in Virginia. Hatteras and Ocracoke Island are perhaps the most famous of them all, for here are great concentrations of channel bass in the spring and fall and anglers come from all over eastern America to try for these great fish. Nag's Head is, of course, well-known to those of us who live in Virginia. Drum Inlet is a famous spot for surf men and there is a lot of surf fishing at Oregon Inlet. Further south there is good fishing at Morehead, Wrightsville and Southport; in fact all up and down the Carolina coast is a surf fisherman's paradise.

One thing you should remember in surf fishing is that the best fish are not always caught by those who cast the farthest. Fish are frequently caught quite close to shore and sometimes almost at your feet. Try different distances and you will catch more fish but generally speaking fish right behind where the waves are breaking.

Channel bass fishing is best in Virginia in May and June and again in the Fall. In Carolina most of the bass fishing is from boats in the spring with the best surf fishing in the fall, and with November perhaps the best month of all. Blues are best in the summer and fall and most of the other surf fish may be caught from warm weather until the fall chill drives them to deeper water.

Many books have been written about surf fishing and this is only a brief outline of some of the things you should know. If it makes you curious to try this sport it may bring much pleasure you have not known before. For there is something to surf fishing no other form of angling can give you. When the fish are biting it is a thrilling sport. Yet even when the fish do not bite a day in the surf is a wonderful experience. The smell of salt water, the soothing sound of the surf, fresh breezes, blue skies, new sights and experiences and the whole land of the sun and the sky and the sea combine to make one forget his everyday cares and trials and for that one day at least to be at peace with the world.





Research has provided us with a wealth of basic material. This, coupled with experience, gives us a good foundation upon which to manage fish and game.

# Research

## Are We Using What We Know?

By BERNARD L. ORELL

*Vice President, Weyerhaeuser Sales Company, St. Paul, Minnesota*

RESEARCH has provided us with a wealth of basic material, though we will never have sufficient to handle the dynamic changes constantly taking place. This, coupled with experience, gives us a good foundation for application of principles. Are we using what we know? To a point, yes, but to a substantial and unfortunate degree, an emphatic no! This includes not only the technical fields, but that of the human resource as well.

Among the *reasons for the lack of use of knowledge* and experience available to the managers of resource facilities are (1) insufficient funds, (2) insufficient economic justification, (3) the lack of concerted action on the part of interested groups, (4) unfortunate public pressures along unreasonable lines, (5) lack of specific research into an immediate problem, (6) a decision favoring some other activity, (7) and pressure to meet a specific local problem.

There are, of course, many ramifications of each. In general, however, any or all may apply to a particular

resource field. Some specific examples would serve to illustrate.

In the field of forestry there is adequate knowledge to justify the establishment of organized protection on all forest lands. Research and statistical experience show that fire losses on unprotected land are twenty-five times those receiving even extensive forest fire prevention and control measures. Despite this, some sixty million acres of forest land, principally in the southern states, do not have any protection worthy of the name. The reason? Lack of funds, an apathetic public, and a mistaken feeling among rural people that burning is essential.

Also in the field of forestry is the insect and disease problem, today taking a greater toll than fire. Examples of too little and too late are all too prevalent and include the spruce bark beetle of Colorado; the spruce budworm of Oregon, Idaho, and Montana; the Douglas fir bark beetle of the Pacific Coast; and many others. White pine blister rust was well on its way toward elimination of the North American white pines before adequate control measures were instigated.

A condensation of a Paper presented to the North American Wildlife Conference, Montreal, Canada, March 14, 1955.

Wildlife management and the people deeply interested in this field also have similar problems. Public pressures have forced artificial feeding of deer with the resulting over-stocking of range areas and the development of weak animals, ending in a probability of actual scarcity. Game biologists have generally established, and are generally agreed on the fact that seasons allowing the taking of either sex of big game animals are beneficial, yet too many states are still clinging to antiquated buck seasons. This is to the detriment of the herds as well as the lowering of game populations. Sportsmen, sincere in their beliefs, but unwilling to take the considered opinion of specialists in the field, are forcing the use of such antiquated game measures.

Among the most important of our natural resources is that of *water*. Essential to all water usage and conservation are the watersheds at the headwaters of streams, as well as the lands downstream. These watersheds, made up of forest and agricultural lands, are terribly important to our entire economy as well as to hunters, fishermen, recreationists, and to industry. In the past and at the present time watershed control has placed its emphasis on *structures rather than the wise management of the basic watershed area*. While structures may be important in some instances, and certainly specific examples for purposes of irrigation can very well be justified, generally speaking the real answer to our water problems is in the *wise handling of the watershed areas*. The reasons for the emphasis on structures? Again, public pressure, or the proposing of structures as a watershed or water control measure when in actuality other reasons are really paramount.

In this same field there are others who would propose that a watershed area be inviolate so far as the use of the timber, grass, and soil is concerned. Water development then becomes its only purpose. This attitude we also know is not wise, not justifiable on the basis of our research and experience. Timber can be harvested, cattle can be grazed, and the soil values can be utilized without damage to the water-holding capacity of the watershed or the run-off variables that are involved.

These examples serve to illustrate the point that we are not using what we have gained from research, experimentation, and practical experience.

Recognition of the interrelationship between the various aspects of any nation's natural renewable resources is paramount. Nearly everyone realizes this interrelationship, but too many, in the pursuit of a particular interest, fail to give the matter coherent thought. We all know soil is primary to all other resource management programs. The soil, along with the forests, provides the habitat for big game and much small game; the streams for fishing; the grasses and herbaceous material for forage; and much of the water for industrial, domestic, and recreational use. The management of any one phase when carried to the extreme without recognition of the total resource value could be detrimental to any one or all of the others. The carrying capacity of any given area could be greatly enhanced by complete cutting of

all of the timber, followed by successive burning on the other extreme. This would, however, be extremely undesirable from the standpoint of watershed value, other recreational values, and the economics of the region dependent on timber resources for continuing crops.

One cannot discuss the wise use of our natural resources and the part that is played in the total of each phase without bringing into focus the most important resource in the use of knowledge and the results of application and experience. This is the element of human relationships.

The subject of human relationships is one about which more has been written but which is less utilized than any other resource we have available to us. The fundamental rules of dealing with others are common and well known. Yet too few apply them in their daily lives. Particularly is this true among the various functions dealing with natural resources. The basic element is as simple as that of treating others as we would be treated ourselves. We are dealing in things of nature. Nature works in concert. We humans who are deriving the benefits of nature must also work in concert if maximum benefits are to be obtained for all of our people.

There is no place in the conservation movement for blanket indictments of whole industries or of whole groups on the record of a few. The labeling of any group with such titles as "land grab gang," "special interests," or "exploiters of our natural resources," is as patently unfair as it is for a forest industry man to accuse all sportsmen or campers of being "irresponsible," "gun happy," "fire bugs," or "litter bugs," and therefore unfit to exercise the privilege of hunting on private land due to a few damaging lookouts, motorized equipment, and oil tanks, or setting dangerous forest fires.

There *is* a place in conservation, however, for controversy, criticism, straight talk, and direct action.

Many people decry controversy. Actually, it is good. It causes men to think, to develop better methods, and to draw sound conclusions. After all, adversity is the ladder up which men climb to greater achievement. We should look at controversy as healthy and as a proving ground for the ideas of a host of independent thinkers.

We all seem to feel we possess the inalienable right to criticize. Conversely, we almost invariably find criticism unpalatable. In presenting criticism, which is in fact our right and responsibility, it is extremely important that such criticism be presented with tact and diplomacy.

When discussing the matter of human relationships and their importance to the field that is paramount here today, a very important part of such relationships is the matter of bringing into the open false premises, unwarranted action, and unethical endeavor. Straight talk and straight thinking with regard to issues on which there is conflict and disagreement certainly are parts of progressive action in finding the actual solution. It is the moral responsibility of every individual to say what he thinks, forcibly, so that everyone knows what he thinks.

(Continued on page 22)





Is it the gun or the man behind the gun that is responsible for our hunting accidents?

# Shall We Outlaw the Rifle?

By I. T. QUINN  
*Executive Director*

**B**OARDS of Supervisors in a few counties, especially in the more or less flat areas of eastern Virginia, are concerned over the use of rifles. In two or three of these counties, use of rifles has been banned for a good many years. Non-hunters as well as hunters are made uneasy where there are men with high-powered rifles in the woods.

The Commission of Game and Inland Fisheries several years ago enacted a regulation which prohibits deer hunting statewide with a rifle with bore smaller than .25. This was not only to save the crippling losses of deer but as a safety precaution. Yet the accidents with small bore rifles continue to outnumber accidents occasioned by the use of larger rifles.

Facts are that there are several times more people killed in Virginia each year with pocket knives than with firearms. But pocket knives are not outlawed. Between 800 and 1,000 people are killed from the use of automobiles and thousands more are injured each year, but no one suggests that motor vehicles be taken off the highways. More people are killed or injured each year climbing in and out of bathtubs, but no one would abolish the bathtub.

It is a serious matter, of course, and a great many thoughtful citizens are coming around to the belief that probably the wrong approach is being made. They ask if it wouldn't be better to begin outlawing the careless hunter who is the cause of accidents, not the gun. It is the man behind the gun who causes accidents.

SIX-YEAR FATALITY RECORD—VIRGINIA  
1949-1955

WEAPON	SEASON					
	1949-50	50-51	51-52	52-53	53-54	54-55
High-powered rifle	0	1	1	0	0	1
Small rifle	1	1	1	1	1	2
Shotgun	7	7	9	1	7	6
Totals	8	9	11	2	8	9

Many have expressed the opinion that there should be legislation looking to punishment of the man who is guilty of any firearms accident. Accidental shooting of a human being could be made a crime under the law, with due punishment, including confiscation of the gun. If a hunter shoots a man's livestock, it could be made a misdemeanor with adequate punishment in addition to requirement of full reimbursement for damages.

Just as long as firearms of any description are permitted in the field of hunting, there will be accidents, some of which will be fatal. Virginia's hunting accidents have, fortunately, been running at a very low level. Of course any accident with firearms is deplorable. Such an accident is spectacular and is given wide publicity.

There are more accidents each year from the use of sidearms and shotguns than from use of all other kinds of firearms. Accidents with smallbore rifle in the hands of untrained boys continue to be regrettable. But although there are many high-powered rifles used in the state in hunting—especially in the mountainous regions—accidents are few.

The same men who are giving thought to the matter are mindful of the fact that use of the rifle in the past has made the greatest soldier on earth out of America's young men. Many a young man, because he learned to use the rifle in the field of hunting, left the battlefield unscathed and victorious.

Several years ago the Commission of Game and Inland Fisheries, at the request of the Board of Supervisors of King George County, enacted a regulation prohibiting hunting with a high-powered rifle in that county. A recent communication from the chairman of that Board asked for a repeal of the regulation so that the large bore rifle may again be used in that county. This is just one example of conflicting viewpoints and why the Commission is hesitant about changing the regulations involving the weapons used in hunting.





Day's operation starts with scouts planting willow saplings for shade at the upper end of farm pond.



Corner of fenced ravine is scalped and planted to wildlife food. Seed was furnished by the Game Commission.



A wood duck nest box is erected. Farm trailer wagon helps to facilitate access to pond. Note box already erected in background on left.



A hillside wildlife feed patch is fenced, fertilized and sown. Note scout group in background building fence.



Farm hands and scouts help plant fish in newly-constructed 4 1/2-acre pond. Scouts will be able to use pond for fishing at a later date.



A rabbit escape shelter is built and piled with brush on the farm hillside. More shelters are planned.



Game Commission seed supplied through Pittman-Robertson is used by the scouts on the project.





Low wildlife area is fenced and border edges are planted to wildlife plantings.



A bluebird house is erected in a tree beside scout meeting-house on the farm.

## Boy Scouts Show What Can Be Done to Improve a Farm for Wildlife

(Commission staff photos)

Commission provides seed and helps put on a conservation field day on Rocky Valley Farm in Fauquier County with Marshall Troop 177 doing the labor. Here in picture story are some highlights of the wildlife improvement work on the 230-acre farm owned by David J. Weiner. Fifteen scouts participated in the program.



A squirrel nest box is hoisted up an oak tree and set into place to provide an additional home for the bushy-tails. More are planned.



Scouts use bulldozer and soil tiller to prepare land for a wildlife field border. They plowed on the contour.



Conservation Day on the farm ends with scouts sowing wildlife plantings and properly fencing new area.



# GAME MANAGEMENT FUNDAMENTALS

## Evolution of Modern Ideas in Wildlife Conservation

(First of a series)

**A**LDO LEOPOLD defines game management as "the art of making land produce sustained annual crops of wild game for recreational use," and compares game management with other agricultural arts by stating that "game management produces a crop by controlling the environmental factors which hold down the natural increase of the seed stock."

Obviously, this modern conception of the conservation of wildlife resources is the result of a long period of development, and is advanced far beyond the ideas first held by man as to the part he should play in providing himself with an abundance of desirable wildlife for use as food and sport. In fact, the idea that game management consists primarily of the control of environmental factors—mainly food and cover—which hold down the natural increase of game is more advanced than that held by many sportsmen today who still feel that releasing artificially-reared game on shooting grounds, regardless of unfavorable food and cover conditions, is the ultimate objective of a game management program.

History shows that whenever man has begun to fear for the welfare of his game his first attempt to preserve the waning supply has been directed toward reducing the kill by restricting hunting. The first written restriction as to the taking of wildlife is to be found in the Mosaic Law, (Deuteronomy 22:6) wherein Moses decrees, "When a bird's nest chance to be before thee in the way . . . with young ones or eggs, thou shalt not take the dam with young. . . ." As Professor Leopold

states in his excellent book on game management, it is obvious enough that the intent of this law was to conserve breeding stock.

But after several centuries man learned that restrictions on hunting would not by themselves bring back the constantly decreasing game supply. His next step was to attempt to control the predators which seemingly competed with him for the decreasing game supply. Later came the setting aside of game lands as refuges or sanctuaries, followed by artificial restocking with wildlife raised on the game farm. The fifth and final stage in the development of the game management idea, apparently resorted to only when all others have failed, is the control of food, protective vegetation, special factors, and disease.

It is interesting to note that Marco Polo, in relating his travels in the Orient during the 13th century, tells of the remarkable hunting preserves of Kublai, "The Great Khan," emperor of China. Marco Polo's description of the great food patches, complete winter feeding system, and control vegetative cover in general leave no doubt that game management in China seven centuries ago had already gone through a long period of evolution and had reached a point that we are only approaching today.

The evolution of American wildlife conservation has been quite similar, in general, to the normal sequence of ideas outlined above. White settlers who first came to this country found such an abundance of game that they



Reduction of kill by hunting seasons and excessive bag limits such as shown here is man's first tool in managing game. Restrictions alone, however, will not bring back a constantly decreasing game supply.



A proper balance between predators and prey species is desirable. In the past predator control alone has not been the answer, although local control in some cases is necessary.





Wildlife refuges, while important in the management of many species, must be coordinated with other management practices for maximum results.



The establishment of game farms was the first attempt to actually produce game, but the idea was faulty and stocking is now done more wisely.

considered it inexhaustible. However, even in those days of plenty it was not long before certain localities began to experience a scarcity of the most desirable forms of wildlife. Indeed, by the time of the Revolution, 12 of the 13 colonies had begun the control of hunting by declaring closed seasons on certain types of game. From that time until the present, hunting regulations have been made progressively stricter, in an attempt to restore wildlife by controlling this factor alone.

Since hunting restrictions were not producing satisfactory results by themselves, men soon began to wage war on predators which appeared to be competing not only for man's game but for his livestock as well. Bounties on predatory species can be traced back to colonial times.

The next step in the usual sequence is the setting aside of game lands where hunting is not allowed. As an early example of this type of conservation, we may cite the waterfowl refuge established on Weber's Pond in Wisconsin in 1891. The first national park closed to hunting was the Yellowstone, which was set aside in 1894.

Closely following the setting aside of inviolate refuges where game could reproduce unmolested and spread out into surrounding territories, the first state game farm was established in Illinois in 1905. Up until this time all efforts at game management were directed toward prolonging the existence of what was now supposed to be a doomed resource. America, first believing the wildlife of this continent to be inexhaustible, later swung to the other extreme and concentrated on controlling the destruction of a valuable resource in order to put off the day when it would finally be entirely gone. The establishment of game farms seems to mark the first attempt to actually produce game, rather than to merely protect that which nature produced. As artificial as this "production" was, it marks the great turning point in our conception of the proper management of renewable resources.

Having come to the realization that we could work with nature to produce enough game to allow us to harvest an annual crop over the gun, it was not long before we further realized that it was not always necessary to carry on this production artificially on the game farm. Now we know that we can produce our game in



The improvement of habitat which stresses food and cover production now seems to be the logical approach to better game management.

the wild state by providing it with a suitable environment in which its natural productiveness can assert itself. Since we Americans have come to this realization a great deal of scientific investigation has been done, and many facts have been learned as to what wildlife requires of its environment. Although all the answers to the problems of wildlife conservation are not yet known, we can safely say that today we *know how* to manage many wildlife species so that their future is secure.

A good game management program will naturally combine all of the controls mentioned in the description of the normal sequence in the development of this art. Restriction of the kill through hunting regulations is essential. A proper balance between predators and desirable game species must be maintained. A system of refuges is an important part in the management of many species. Artificial restocking has its place in the restoration program. But it is important that sportsmen as well as professional game managers realize that the greatest benefit can be derived from these four practices only when they are combined with effective environmental control which will provide the game with its requirements for food, protection, and other needs for 365 days a year. Once such a suitable wildlife habitat is provided, it will be much less difficult to maintain an adequate supply of wildlife to occupy it.

# FISH CONSERVATION FUNDAMENTALS

By R. W. ESCHMEYER  
*Vice president, Sport Fishing Institute*

## The General Picture *(This is the first of a series of articles)*

FISH conservation has had an interesting development. Here are some of the major points in its evolution, shorn of the many qualifying statements which would normally be made if space permitted. The evolution is interesting partly because of its uneven development; in some states it has progressed much farther than in others.

### REGULATION

In time, there was local evidence of depletion, especially where easily caught spawning runs were harvested extensively. Locally, some regulation of the fishery seemed desirable. Emphasis was on allowing brood stock to spawn. It was felt that there could be closed seasons at spawning time and that the fish should not be taken until they were big enough to have spawned once. There was a tendency, too, to limit the individual catch. The regulations, therefore, involved closed seasons, size limits,



and catch limits. The emphasis was strictly on regulation. The laws were imposed by the legal bodies—generally by state legislatures.

Enforcement called for a special set-up, usually consisting of a chief warden and field wardens. These individuals were political appointees. The warden jobs were a welcome addition to those politicians who needed to find a pay check for their faithful campaigners.

### STOCKING

In time, there was a new development. It was found that fish could be produced in hatcheries and rearing ponds. The artificial hatching and stocking of fish fry became a craze. The federal government and the states built more and more hatcheries.

The expanded “fish conservation” program called for the spending of considerable sums of money. To pay for the costs of the state programs, anglers were required to purchase licenses. Here the taxation was directly on the “consumer.” The income from licenses was generally turned over to the general fund. The legislatures then decided on how it was to be used. Necessarily, due consideration was given to the political values.

### THE PEACEFUL DAYS

Conservation became a simple routine. If sportsmen in a locality became dissatisfied, a load of hatchery fish fry usually lulled them back to complacency. If this wasn't enough, they might be given a few additional cans of fish, or a few new restrictive laws would be imposed. If the anglers were especially hard to please, they might be given an added warden, or a replacement for the warden already on the job! These were the peaceful days of fish conservation.

There was only one thing wrong with the “fish conservation” program—it didn't help fishing! There were harder days ahead . . .

### TROUBLE SHOOTERS

Finally, and perhaps in desperation, they employed biologists, usually biology professors who had time to spare from their teaching during the summer months. The biologists served a worthwhile purpose from the start, as trouble-shooters. The administrator could restore contentment, momentarily, by sending the biologist to trouble areas, and by indicating to the public that “we are studying the problem.”

But, the biologists weren't content with the “trouble



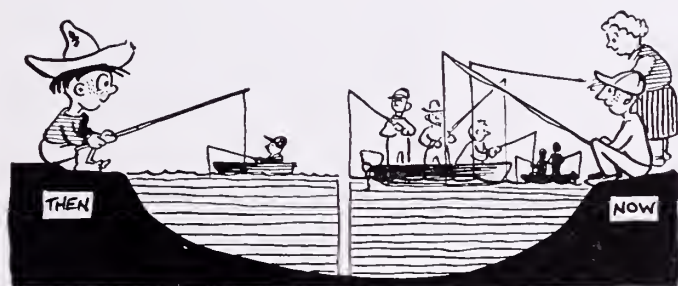


shooter" role. Typical of their breed, they were conscientious people who wanted to find the answers.

Meanwhile, the public was inclined more and more to rely on specialists—on doctors, lawyers, engineers, agricultural experts. So, naturally, the public was beginning to place reliance on the trained fishery experts. This led to internal difficulties. The politically appointed administrators, wardens, and hatchery men, who originally considered the biologists with their big words and their devotion to their jobs to be an interesting novelty, now began to think of these specialists as potential competitors for their jobs. The biologists were openly ridiculed. But, they stuck to their knitting. In some instances the ridicule was deserved; many biologists failed to recognize the human angle. Some were impractical. Some were obviously deficient in "bedside manner."

### THE PASTURE

Most important was the observation that a lake or stream is really a pasture, with extremely prolific "live-stock," and with the rate of growth depending on the amount of food available. It was found that fish needed more than just water; that other conditions needed to be favorable, too. It was discovered that a small fish wasn't necessarily a young fish—he might be an under-fed old-



timer! The technical fellows learned about food chains; a bass eating small fish which eat insects which subsist on microscopic food isn't equivalent to a sheep eating grass. It's equivalent to a super-predator eating wolves which eat sheep which eat grass. This explained quite clearly why our lakes and streams couldn't be "half fish and half water!" The biologists gradually learned many things even though they couldn't find a simple answer to the question of how to give "ideal" fishing to all anglers.

### ADMINISTRATORS

Meanwhile, the internal feuding led to interesting developments. In some states the political administrators were replaced by other people. Hatchery men were given the top fishery jobs in some states, wardens in others, and biologists in still others. In every instance, some individuals developed a broad viewpoint and did a good job. Others retarded conservation in their states. Today, we have administrators in all these categories.

The fishery administrators who came up the hatchery ladder naturally tend to favor stocking. Some do everything possible to retard progress; others are doing a good job in the administrative capacity. In several states

these men have definitely opposed fact-finding. They may have one or a few trained men on the staff, because of public demand, but the men are held down and some of their findings are kept from the public.

The tendency is, more and more, to put formally trained fish men in charge of the state fishery programs. These men, trained as biologists, may have trouble in public relations, but in general the programs which they advocate are the most progressive.

In the interesting evolution of fish conservation the need for formally trained fish men is now generally accepted—following the same evolution as we have had in medicine, engineering, and other specialized fields.

### THE PRESENT PICTURE

As for the current fish conservation picture, enough is known now to present it rather graphically. Here it is:

1. We have more and more anglers. Fishing pressure increases constantly.
2. A lake or stream will produce only a limited amount of "livestock." The average acre of water in the United States probably supports only about 100 pounds of fish.
3. Of these fish, only a portion are of the size or species wanted by the angler. In many waters the desired fish are in a minority.
4. Of the available supply, only a fraction can be caught. The hook and line is inefficient. This point will be easily appreciated if you try "fishing" for rabbits—baiting your hook with a piece of carrot and waiting (hidden) for a rabbit to take it! On many of our big waters the catch is only a small fraction of the available supply.
5. Because of siltation and pollution, many waters can no longer support as big crops of fish as they once did.

In view of the above observations it's easy to see why the average catch gradually dropped with increased fishing pressure. It dropped to where the average catch was less than one fish per hour, and the average fish was less than ten inches long.

Now, we have growing evidence that fishing is improving. The trained fishery fellows are learning, more and more, how to manage our waters. They are becoming more efficient in handling our fish management tools: (1) stocking, (2) regulation, (3) environmental improvement, (4) controlling fish populations, and (5) creating more fishing waters.

To use the tools still more effectively we need more fact-finding and a more enlightened public. Consequently, in those states which are trying to progress rapidly the emphasis is on research and on conservation education. If your state isn't emphasizing these two items, it's not doing a good job.

These are still problems, many of them, but we're now optimistic about the future of fishing in some states. We're less optimistic about some others because they have not yet moved far in their fish conservation "evolution."



An adult native wild gobbler. A sleek and immaculate appearance is characteristic of this fine game bird.

## *The Wild Turkey in Virginia*

By HENRY S. MOSBY

*Virginia Cooperative Wildlife Research Unit\**  
*Virginia Polytechnic Institute*

THE wild turkey is Virginia's largest upland game bird. This forest dwelling bird (technically named *Meleagris gallopavo silvestris*) is considered to be one of our wariest wild animals. If this were not so, it would be recognized as one of our more brilliantly colored game birds. It is so shy, however, that opportunities to see the turkey in the wild are rare and fleeting. Normally, the turkey is seen in the deep shade of the forest and for this reason, most persons consider the wild turkey to be only a dark colored bird, with little color. On the contrary, a strutting wild gobbler, seen in the full sunlight of a forest opening, is indeed a colorful sight with his bronze hued body, richly tinged with iridescent red, and the purplish colored wing coverts. The chestnut brown tips of the tail coverts and the chocolate tipped tail feathers immediately separate the wild turkey from his domestic relative of the farm yard. The domestic turkey is more sombre hued and its tail feathers, both the coverts and the larger tail feathers, are tipped with white.

Our Virginia wild turkey is a distant relative of the domestic barnyard turkey. The domestic bird (*Meleagris gallopavo gallopavo*) actually originated from the wild turkey of Mexico where it had been raised in captivity by the Aztec Indians for centuries. The ancestors of our present day domestic turkey were first seen by white men when the Spaniards conquered Mexico in the early 1600's. They were taken by early Spanish explorers back to Europe. Later, this Central American turkey was brought back to North America by the early colonists. So, our domestic turkey is not a direct descendant of our wild turkey, although it is closely related to it.

The unique gobbling of the wild turkey heralds the beginning of the breeding season here in Virginia about the first of April. Adult toms, usually more than two years of age, attempt to attract as many hens to their harem as possible by these early morning calls. Once the hen or hens come within sight of the vain tom, he goes into ecstasies of strutting and wheeling in order to impress the females with his beauty. Egg laying begins immediately, with the hen making repeated visits to the gobbler until her clutch of approximately 12 eggs has been laid. The female places her nest directly on the

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ground, usually concealing it under low hanging vegetation, at the base of a tree, or beneath a fallen tree lap. The wild turkey is polygamous and only the hen assumes the duties of incubation, hatching and rearing of the young. Normally most of the 12 eggs laid by a wild hen hatch and the active, downy young wild turkeys poults can follow the hen immediately upon hatching. The hen and her brood remain together throughout the summer and until late winter, often being joined by other hens who have not been successful in bringing off a brood. The size of the wild turkey brood decreases throughout the summer from natural losses. From the approximately 12 young poults that hatched in June, probably not more than 7 or 8 will remain by September. Incidentally, the number of hens that were unsuccessful in bringing off a brood and the size of the single hens with broods in September are measurements that wildlife managers use to determine the productivity of the wild turkey population each season. Of course, the greater the number of hens that bring off successful nests and the greater number of poults they can rear, the greater will be the increase in the turkey population. Young turkeys require careful brooding for about 4 weeks after hatching and rainy weather is particularly hazardous to young turkeys during this period. Some poults fall into ditches and other holes from which they can not escape, some may be taken by predators, others suffer miscellaneous accidents or are lost to other causes. So, the size of the wild turkey brood, in common with the broods of other upland game birds, diminishes as the summer rearing season progresses. By the time the young turkeys are 12 to 14 weeks of age, however, they begin to assume the size and color of their parents and they are well able to care for themselves thereafter.

The wild turkey is essentially a forest bird, securing a majority of its food from such sources as oak mast, berries, grapes and dogwood fruit. It does utilize openings extensively, especially during the summer and early fall, and during this period of the year it consumes large numbers of insects. The wild turkey ranges over a large area, often covering from 5,000 to 10,000 acres in its movements. For this reason, forested areas of at least 10,000 acres are necessary in order to manage successfully a wild turkey population.

The wild turkey has been part and parcel of the heritage of the Virginia sportsman and ornithologist from early colonial days to the present. Even today, with all



of the changes which have occurred in Virginia since the time of Captain John Smith, the wild turkey is found in almost two thirds of the counties of Virginia. The only large section of the state which does not now have a native population of this bird is the Southwest, the region lying between Roanoke and

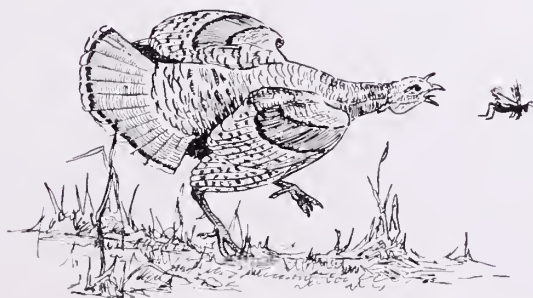
Bristol. Efforts have been made over the last quarter of a century to reestablish the wild turkey by restocking in the Southwest, but up to the present time the results of these efforts are in question.

In 1937 it was estimated that there were about 23,000 wild turkeys in Virginia and this bird was found in 68 of the then 100 Virginia counties. Occupied wild turkey range was estimated to include about 34 percent of the State at that time. The average annual kill of wild turkey during the 1930's was about 6,800 individuals. During the succeeding 15 years, unfortunately, both the total number of wild turkey in the state and the number annually harvested by Virginia sportsmen have declined rather alarmingly. During the last several years, for example, the total annual kill of wild turkey by sportsmen has rarely exceeded 4,000 birds. In fact, during the 1952-53 hunting season the reported kill of wild turkey was only 1,606 individuals, the lowest harvest on record of this wonderful game bird.

ANNUAL WILD TURKEY KILL IN VIRGINIA  
1927-28 through 1954-55

Hunting Season	Estimated Kill	Hunting Season	Estimated Kill
1927-28	8,219	1941-42	4,800
1928-29	6,204	1942-43	4,593
1929-30	9,428	1943-44	5,292
1930-31	5,160	1944-45	3,846
1931-32	6,339	1945-46	5,414
1932-33	7,574	1946-47	4,528
1933-34	6,241	1947-48	4,083
1934-35	6,629	1948-49	3,642
1935-36	6,092	1949-50	3,655
1936-37	5,583	1950-51	2,760
1937-38	7,560	1951-52	2,148*
1938-39	6,700	1952-53	1,606*
1939-40	6,731	1953-54	2,531*
1940-41	6,398	1954-55	2,023*

Kill records, field reports and general observations all indicate that the wild turkey population for the entire state began to decline noticeably about 1945. This decline was first noted in northwestern Virginia, later becoming evident in Tidewater and even later in the Piedmont. By 1950, however, the turkeys in the northwestern mountainous section, principally on the George Washington National Forest, began to show an increase in numbers. There seems to have been a steady increase in the number of turkeys in the northwestern mountains, particularly in Bath County, but a similar recovery of the Piedmont and Tidewater turkey population has yet to be demonstrated. The cause, or causes, of the fluctuations in the populations of the several sections of



the state have not been determined. The Game Commission and the Wildlife Unit at Blacksburg have been working on this problem but no definite cause for the observed ups and downs has been uncovered at this time. Of course, lumbering has been particularly severe throughout all of Virginia during the last 15 years due to the demands for timber products during and following World War II. The possibility that disease may have contributed to these changes in the turkey population has been checked without results. Similarly, there is no relation, so far as can be determined, between the decline of the turkey and predation, accidents, food shortage or other similar factors. It has been noted, however, that the state-wide turkey population appears to be related in some manner with the number of successful nests brought off by the wild turkey hens in the several regions of the state. For example, where the turkey popu-

MONTHLY BROOD SIZES (SINGLE HENS AND BROODS)  
OF WILD TURKEYS IN VIRGINIA

By months from May through September, 1953 and 1954

Month	— Year 1953 —		— Year 1954 —	
	No. Reports	Av. Brood Size	No. Reports	Av. Brood Size
May	29	10.9	4	11.0
June	124	10.8	43	9.9
July	95	9.2	32	8.7
August	76	8.5	20	10.1
September	53	8.4	12	7.4

lation appears to be increasing, more hens appear to have been successful in their nesting attempts. In addition, work done during the breeding seasons of 1953 and 1954 indicates that the average brood size of the wild turkey, especially during September, may be used to indicate the general status of the turkey population and the number of wild turkeys that will be available to the hunter during the following fall.

The general decline of the wild turkey has been a cause of concern to everyone interested in this magnificent bird. During the last ten years, both the daily and seasonal bag limit has been reduced and the length of the hunting season has been shortened in some sections. Increased emphasis has been given to improving the

wild turkey habitat, particularly on the two National Forests and on the three State Forests. Restocking of both occupied and unoccupied wild turkey range has been stepped up considerably during recent years. Since 1929, some 14,000 wild turkeys have been produced in captivity and released in all sections of Virginia, using every known method of liberation. The results of this expanded restocking effort have not been encouraging up to the present time. Many individuals think that a further reduction of the hunting kill may be necessary and that additional emphasis *must* be given to every known method of protecting and encouraging the wild turkey throughout the Old Dominion. Experimental work is already underway to determine if the vast acreage of Southwestern Virginia now practically devoid of wild turkey, can be rehabilitated by the use of wild trapped stock. The collection of data on the breeding success of the wild turkey population will be continued on an annual basis so that the game officials will have a constant check on the "pulse" of the turkey population in the several regions of Virginia.

It is encouraging to note that the decline of the turkey population in Northwestern Virginia, on the George Washington National Forest primarily, appears to have been halted. In this section, it is possible that the turkey is recovering from its downward plunge. A similar "upswing" is not yet apparent in Piedmont Virginia and the status of the Tidewater turkey population still borders on the alarming side.

The wild turkey is an interesting bird of extremely high sporting value. Every effort must be made to insure that this forest dweller remains in all possible coverts here in Virginia. The Commission of Game and Inland Fisheries is deeply concerned with the welfare of the wild turkey and it is trying every possible way to insure that it remains high on our game bird list. Drastic action may be necessary to accomplish these objectives. All thinking sportsmen and conservationists of the Old Dominion will follow the lead of their Game Commission in all of its efforts to preserve and increase the wild turkey in Virginia. This will call for unselfish efforts and clear thinking on the part of everyone concerned with the welfare of this grand bird throughout the entire Commonwealth.

#### RESEARCH (Continued from page 12)

We are using a part of what we know, but there is a great deal of knowledge that has not been applied. This is particularly true with regard to relationships between individuals and groups representing various interests in the outdoors. Certainly even casual observation will make us realize that no one group has a monopoly on integrity, nor is any group completely free of persons who are unethical.

The problem of working with people with divergent interests is a great deal like that of the young woman who rushed to her mother in tears three days before her

wedding. "Mother," she said, "I cannot marry Joe. He is an atheist. He doesn't believe in hell." After a brief moment of thought, the mother replied, "Don't worry, honey. You go right ahead and marry him, and between the two of us we'll teach him the meaning of the word."

Working together with true recognition and understanding of the position taken by others, we can teach the "sons-in-law" in our public and in the various groups the true meaning of conservation as wise use, and thereby an aggressive, active, coordinated program of resource management.



## EIGHT ANNUAL WILDLIFE ESSAY CONTEST WINNERS

The Virginia Division of the Izaak Walton League and the Commission of Game and Inland Fisheries have announced the 56 winners who received cash awards totalling \$1000 and a \$400 scholarship winner for the senior class in the eighth annual Wildlife Essay Contest, co-sponsored by those organizations. The contest is an annual conservation education project which has been held each year since 1947.

Governor Thomas B. Stanley, at ceremonies in the Capitol at Richmond on May 20, presented Scott Wallinger of Henry Clay High School, Ashland, Virginia, with a \$400. college scholarship for his essay judged the best in the state for a high school senior in the eighth annual wildlife essay contest.

The Governor also presented \$50. grand prizes to the following eight students in grades 12 to 5 respectively: Jane Nessenthaler, James Monroe High School, Spotsylvania County; Agnes Jordan, Farmville High School, Prince Edward County; Robert W. Lipscomb, Culpeper High School, Culpeper County; Judy Acree, Farnham High School, Richmond County; Mary Lanie Gunter, Albert H. Hill Junior High School, Richmond; Alice Vaughan Racer, John Wyatt Elementary School, Lynchburg; James H. Littrell, Ruffner Elementary School, Rockbridge County; Rusty A. Gibbs, Oak Grove High School, Westmoreland County.

Eight second prizes of \$25. each went to Jesse Heflin, Remington High School, Fauquier County; Phyllis Bass, Buchanan High School, Botetourt County; Zeta Faye Beeson, Hillsville High School, Carroll County; Richard Abe Hylton, Caroline High School, Caroline County; William James Lawrence, Lee Junior High School, Roanoke; Joseph Shapiro, Walter Reed Elementary School, Newport News; Mary Ellen Hanna, Jeter Junior High School, Covington; Margaret Clardy, Wylliesburg School, Charlotte County.

Eight third prizes of \$15. each were awarded to Robert Holmes, Susie Q. Gibson High School, Bedford County; Bobby Camper, Lexington High School, Rockbridge County; Betty Marlowe, Warren County High School, Warren County; Maurice Fisher, Blair Junior High School, Norfolk; Jean Wingo Morris, Wakefield High School, Sussex County; Ranelle Willis, Laurel Fork Junior High School, Carroll County; Bobby Kirchner, Douglas Freeman School, Henrico County; Norris Boone, Weyanoke School, Fairfax County.

The sixteen who received the \$10. honorable mention awards were Carla Warner, Fairfax High School, Fairfax County; Robert Dunning, Norview High School, Norfolk; Bill Willis, Andrew Lewis High School, Roanoke County; Billy Jean Walters, Rocky Gap High School, Bland County; Patricia Shifflett, Broadway High School, Rockingham County; S. Wayne Iraserie, E. C. Glass High School, Lynchburg; Gordon Senter, Albemarle High School, Albemarle

County; Kennell Jackson, R. R. Moton High School, Prince Edward County; Mary Lee Willis, Cheek School, Floyd County; Bing Floyd, Parry McCluer High School, Buena Vista; Robert Kane, Montpelier School, Hanover County; Barbara Jean Trear, Farmville School, Prince Edward County; Eleanor Sloane, South View Elementary School, Roanoke County; Nancy Elizabeth Allin, Warsaw School, Richmond County; Milton Morse, Albert V. Norrell School, Richmond; Carolyn Hazelgrove, Battlefield Park School, Hanover County.

Sixteen other special mention prizes of \$5. each were awarded to the following: Betty Ann Grogan, Fieldale High School, Henry County; Myrtle Lee Holt, Wakefield High School, Sussex County; Wiley Jones, Jr., LaCrosse High School, Mecklenburg County; B. C. Atwell, Jr., Bland High School, Bland County; Gordon Cloney, Fairfax High School, Fairfax County; Dorothy Hash, Oak Hill Academy, Grayson County; Mary Ann Kessinger, Buchanan School, Botetourt County; Lee Goss, Fieldale High School, Henry County; Sarah Shapley, Potomac School, Fairfax County; William Harold DeBord, Saltville School, Smyth County; Richard Ash, Franklin Sherman School, Fairfax County; Annis Mitchell, William King School, Washington County; David Broadbudd, Battlefield Park School, Hanover County; James Kappes, Thomas Jefferson School, Augusta County; Allen Layman, Fishersville Elementary School, Augusta County; David Smith, Bandy Elementary School, Tazewell County.

The \$40. cash school participation prize went this year to LaCrosse High School, Mecklenburg County, Mr. Leland D. Walker, principal. The school had 100% participation in grades 5 through 12.

In addition to the \$1400. cash awards, recognition was given to Virginia students deserving praise for essays of outstanding merit. Beautifully engraved certificates of merit were awarded to some 240 students from every part of the state.

The Game Commission and the Izaak Walton League played host to the grand prize winners in Richmond on May 20th. This year the presentation ceremonies were taped by a local radio station. The honor luncheon was held in the Washington Room of the Hotel John Marshall where there were short address by dignitaries of the conservation organizations, followed by a showing of the new color film, "Canada Goose."



### **Izaak Walton Park Proposed for Richmond Chapter**

The Richmond Chapter of the Izaak Walton League of America has long sought a club site and property which would make possible needed recreational, social, family and conservation activities. Experience has shown that successful IWLA chapters need club property to stimulate and implement club programs.

With this in mind, the Richmond chapter has taken an option on the Ball Farm, 10 miles west of Richmond, near Midlothian and about a mile and three quarters off Route 60. The property has 201 acres, 80 clear and 121 forested, a farmhouse and outbuildings.

A plan of financing is being worked out which involves the sale of 100 or more \$100 non-interest-bearing non-negotiable bonds to be sold to chapter members only. These bonds will be secured by a second mortgage on the property. If the required down-payment is not met, all bond money will be returned.

Improvements, mortgage payments, interest, taxes, insurance, etc., are to be met by rental of farmland for cultivation, voluntary contributions, part dues and other financial annuities worked out by the chapter finance committee.

Privileges will include fishing, after the lake is built, skeet, rifle and pistol ranges, field trials, shoots, casting tournaments, etc. Special use privileges may be granted to worthy youth and conservation groups such as the Boy and Girl Scouts, school groups, nature clubs, etc.

### **Tropic-Bird Off the Beam Ends Up in Staunton**

Monroe Cooper, of Waynesboro, has sent in a photograph of a yellow-billed (or white-tailed) tropic bird,

blown off its course by Hurricane Hazel and picked up, still alive, in the back yard of Miss Mary Artis Danner, of Staunton.

The bird gave Miss Danner a bad bite when she picked it up, but would not take food or water and died the following day. Charles H. Robertson sent the specimen to Freed's Taxidermy in Waynesboro where Mr. Cooper saw it mounted and secured the picture which he thought would interest our readers since he believes it is the first record of the bird in the state.



This yellow-billed tropic bird was far off course as a result of Hurricane Hazel.

Tropic birds seldom stray from the tropics, but have been seen off the coast of Long Island after a hurricane. "Boatswain bird" is a popular name for the silky-plumaged bird, supposedly conferred because of its rolling gait or its shrill call.

The yellow-billed tropic bird, *Phaethon lepturus*, lives in the Bermudas, Bahamas and the West Indies. It also nests on cliffs of Pacific Islands and even on the walls of volcanic craters in Hawaii. It has an easy wheeling flight and floats buoyantly, but is rather clumsy on land. The females lay a single egg which is red and the newly hatched birds are downy, not naked. Fortunately, commercial feather collecting of the species has nearly

ceased. However, the introduction of house cats and Norway rats in certain regions where they live threatens their survival there.

### **Wildlife Award Winners Announced**

The Wildlife Society's coveted Aldo Leopold Memorial Award for 1954 has been conferred on Dr. Clarence Cottam, former assistant chief of the U. S. Fish and Wildlife Service and now dean of the college of biological and agricultural science at Brigham Young University.

Allen W. Stokes, of the Ontario Department of Lands and Forests, received the award for the best publication during the year on a terrestrial species of wildlife, his "Population Studies of the Ring-Necked Pheasants on Pelee Island, Ontario." The best fisheries publication award went to Dr. W. E. Ricker, of the Pacific Biological Station, Nanaimo, British Columbia, for his paper on "Stock and Recruitment," a mathematical treatment of fish and invertebrate populations.

Durward L. Allen, former chief of research for the U. S. Fish and Wildlife Service and now at Purdue University, was given the Society's conservation education award for his book, "Our Wildlife Legacy." A second award in the education category was presented to Ted Pettit, conservation director of the Boy Scouts of America, New Brunswick, New Jersey, for his active leadership in developing conservation as the 1954 good turn theme of the Scouts.

Honorary memberships in the Wildlife Society were conferred on Dr. Arthur A. Allen of Cornell University and on Dr. Paul L. Errington of Iowa State College.



### **E. Laurence Palmer Endowment Fund Established**

Former students have established an endowment fund in honor of Dr. E. Laurence Palmer and in appreciation for his 33-year service in the section on nature, science and conservation education at Cornell University. The income from this E. Laurence Palmer Scholarship Endowment Fund will be used to assist deserving graduate students in this field of study.

Contributors to the special fund are not restricted to former Cornell students, since it is believed that many of "Eph" Palmer's friends will wish to join in honoring him, the Wildlife Management Institute believes.

### **Virginia Bowhunters Keep in Trim**

The Virginia State Championship Tournament for archers will be held this year on June 11 and 12 at the range of the Augusta Archers at Woodrow Wilson Center, Fishersville, Virginia. The range is located between Staunton and Waynesboro on Route 250.

Defending state woman's champion will be Pat Hamilton, of Glen Allen, who bagged a buck at Hog Island last fall. Defending the men's championship will be Luke Berry. There will be trophies for each class and separate trophies for out-of-state competitors on the basis of the aggregate score for the two-day shoot.

Registration will be at 8 A.M. and the shoot will begin at 9 o'clock. Be sure to bring your classification card with you.

Virginia archers have been getting in trim for this season of tournaments and next season of bowhunting on their own field ranges and at various shoots around the state such as the Valentine and April invitational shoot at the Augusta range, the Monteith Memorial shoot in May at the Richmond Archers' "Jaymont," and tournaments at Virginia Beach, Colonial Heights, Roanoke and Hamilton.

Besides bringing up their scores with the state tournament in mind, prospective bowhunters should be in fine fettle for Hog Island, Big Levels and hunting with bow and arrow elsewhere in the fall.

Last year's roster was 13 organized clubs in the state and membership in the Virginia Bowhunters Association was approximately 300. This year, with about 20 clubs, the association is hoping to bring the total to 500 before the end of 1955.

### **In Spring, Some Men's Fancy Turns to—Minnows!**

Julian Hill, game warden of the city of Richmond, probably has less notion what the day's work will bring than most wardens of the country do. He may have to pick up a fox wearing a collar in South Richmond, or an opossum in the East End, or get a call that a deer is on the loose in Ginter Park.

One nice fishing day recently he caught two men and two boys seining minnows—they said—in Bryan Park, but they had a suspicious number of perch in their buckets and were equipped for a really big haul with a Dodge truck and two drums.



### **A Nation of Hunters and Fishermen**

Sportcaster Bill Stern tells us that not baseball, but hunting and fishing are America's favorite sports. Baseball drew 18 million paid customers in 1953, Stern said, rodeos got 20 million and horse racing was close with 30 million, but hunting and fishing topped them all with 32 million license-buying hunters and fishermen.

An estimated four million more saltwater fishermen were not required to have licenses. Approximately three million persons were given free hunting and fishing privileges by various states and none of these figures takes into account the additional uncount-

ed youngsters and women who are not required to have licenses in many states.

### **Wildlife Management Institute Recommends Dove Banding**

The Wildlife Management Institute suggests dove banding as an interesting and helpful outdoor hobby, an excellent project for youth groups such as the Girl Scouts, Boy Scouts, 4-H Clubs and Future Farmers of America. Under the direction of an adult sponsor, the groups could search for dove nests and actual banding could be done later with the sponsor.

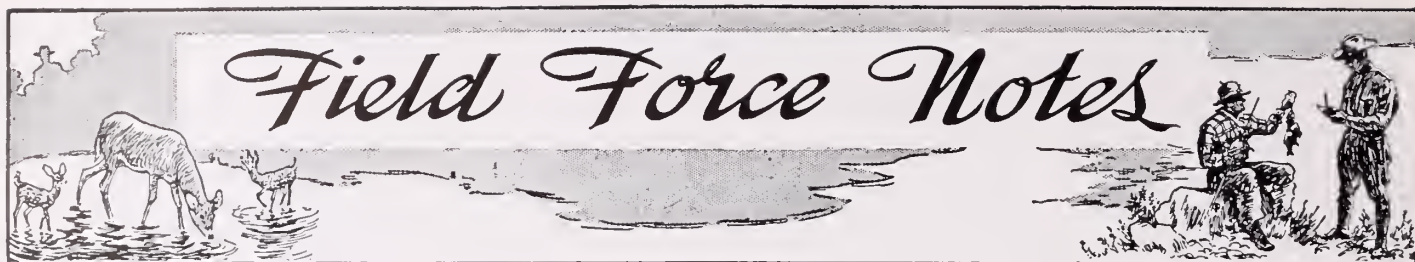
This activity, conducted and sponsored by the U. S. Fish and Wildlife Service, is done to gain greater knowledge of the habits and movements of these migratory birds. Cooperators place regulation numbered leg bands on adult doves and nestlings during the breeding season. Records of banded doves are kept and as birds are re-trapped or reported by hunters, wildlife officials are able to trace their movements.

Banding permits and the proper leg bands can be obtained from the U. S. Fish and Wildlife Service, Washington 25, D. C. Application should be made to the Virginia Commission of Game and Inland Fisheries for approval of the permit.

### **National Forest Trout**

A. H. Anderson, Forest Supervisor of the George Washington National Forest, reports that some 41,500 year-old trout were stocked in National Forest streams this year. Of that total, 14,800 were brook trout and 26,700 were rainbows, all furnished through the cooperation of the United States Fish and Wildlife Service. Stocking costs are borne by the Cooperative Wildlife Management Program of the Virginia Commission of Game and Inland Fisheries and the United States Forest Service. Income is derived from the stamp required to hunt or fish on National Forest land.

The streams stocked were in the counties of Alleghany, Amherst, Augusta, Bath, Frederick, Highland, Page, Rockbridge, Rockingham, Shenandoah, and Nelson.



### **Creeds Scout Troop Builds Wood Duck Boxes**

T. E. Thieman, Special Game Warden for Princess Anne County, sends us word from Back Bay about the wood duck nesting box project of Scout Troop 63, Creeds, Virginia.

After receiving pamphlets from the Fish and Wildlife Service, Game Agent Darrel F. Shuffler and the Scout Troop got busy on plans and construction of wood duck nesting boxes. Under the Supervision of Committeemen Herman M. Flora, Roy L. Lovitt, William H. Craft, Melvin L. Knight and Scoutmaster Peter VanNess, Assistant Scoutmaster W. T. ("Sonny") Gregory, a dozen boxes have been completed, five are already up and awaiting occupants. The goal is set at 50.



These boys from Scout Troop 63, Creeds, Virginia, are helping Woodie, the wood duck, with his housing problem.

The scouts who have worked on the project are Jackie Morrison, Herman Flora, Jr., Jimmie Bright, Lionel Ewell, Richard Hancock, Ronald and Donald Mayo, Pete Craft, J. H. Reams, Clyde Bonney, Danny Dudley, Darwin Lovitt, Joseph Jones, Stanton Ruark, Herald Freeman, Jimmy Carrol, Billy Saunders, Butch Smith, Jimmy Waterfields, J. D. Waterfields, Tommy Ackiss, Jimmy Kight, Shelby Etheridge, Jimmy Dudley, Bradford Jones, Gene Bright, Stanley

Twiford, Robert Beasley, and Charley Burgess.

### **The Fishing Dog of Satterwhite's Landing**

K. M. Anderson, U. S. Resident Ranger at Buggs Island Lake and John H. Kerr Reservoir on the Virginia-North Carolina boundary, has quite a fish story which he vouches is a true one, of six bream caught within five minutes—by a fishing dog.

The German Shepherd, owned by the Vance County (North Carolina) Wildlife Club, has been trained to catch bream which come into the landing after food thrown from the wharf. The dog gets into the water and waits for them to close in and then seizes one. A true sportsman with no ulterior motives, the dog reportedly has not yet acquired a taste for fish and so far has not added the trick of stowing them away in a creel.

### **Getting Fishing Tackle the Hard Way**

Richmond Game Warden Julian Hill recently caught two men who were impersonating game wardens in the city. They had asked to check the licenses of two couples who were fishing on Mayo's Island. Apparently the four were suspicious, because the men asked for credentials and the girls took the opportunity of getting away and warning authorities.

The lake game wardens told the two anglers they could get back their rods and reels if they brought the girls back. Fortunately, however, when the girls did come they brought the "law" with them and later in court the would-be wardens were fined \$50 each and given a six months suspended sentence.

### **The Game Commission's New Eagle**

The Game Commission has a fine new mount of an immature bald eagle with a huge wingspread of 92 inches.

The eagle had been brought to Sandston taxidermist Hubbard F. Walker for mounting. Walker, realizing that it was illegal to take a bald eagle or even to mount it without a permit, called in Virginia game wardens C. I. Smith, Jr., and J. J. Westbrook who in turn notified the Federal Agent since the bald eagle is protected by Federal law. The specimen was such a beautiful one that the taxidermist offered his services to prepare it so it could be displayed at the Commission in Richmond.



This immature bald eagle makes an impressive trophy for the Commission Hearing Room.

### **Buggs Island Lake Proves Flood Barrier**

Virginia Wildlife Editor J. J. Shomon and Commission Photographer Leon G. Kesteloo recently made a trip to gather material for a forthcoming article on fishing in Buggs Island Lake and the John H. Kerr Reservoir.

They also had an opportunity to see the headlined high waters of the impoundment which Acting Reservoir Property Manager Max C. Weeks said had acted as an efficient protection against serious flooding further down the Roanoke River in North Carolina.



# Wildlife Questions and Answers

**Ques.:** Is it true that a bee can sting only one time?

**Ans.:** Yes, a bee can sting only once because it loses its stinger. You may get a repeat performance, however, from wasps, hornets and yellowjackets.

**Ques.:** What is the purpose of tagging fish?

**Ans.:** Tagging fish is an important part of fish management, enabling fish biologists to learn something about the distance and nature of fish migrations and movement.

**Ques.:** Are there any golden trout in Virginia?

**Ans.:** There are no golden trout in Virginia unless they have been introduced to some private pond of which the Commission is not aware. The species is at home in high mountain lakes of the western mountains and its range is more restricted than the rainbows which have been successfully stocked in Virginia trout streams.

**Ques.:** Can the beaver be stocked in the mountain counties of Virginia?

**Ans.:** The Commission does not ordinarily stock beaver in the mountain sections of the state because it has been found that they tend to move down to slower moving portions of streams in more level land and often become troublesome, especially to farmers, in such locations.

**Ques.:** Can moles see anything at all?

**Ans.:** A mole can distinguish light from darkness, but probably no more than that.

**Ques.:** Could you suggest any way I might protect the songbirds of my garden from prowling cats of the neighborhood?

**Ans.:** You can give the birds some protection by tree guards of sheet metal shaped like funnels and placed at least six feet above the ground on either poles supporting birdhouses or on trees where there are nesting birds.

**Ques.:** Is there such a thing as a flying fox?

**Ans.:** Certainly there is no such thing as a fox which flies. The so-called flying fox is the largest of the bats, sometimes having a wingspread of as much as five feet.

**Ques.:** What about this matter of chilled and dropped shot? Can you tell me which you recommend for upland game?

**Ans.:** According to Henry P. Davis, of Remington Arms Company, "Shotgun shells are not loaded with steel shot. Regular lead shot is used which is hardened to some degree with antimony. This is called chilled shot. Shot with a smaller amount of antimony in it is called dropped or soft shot. Both, however, in the course of manufacture, go through the same process. The only difference lies in the amount of hardening antimony.

"There has long been an existing argument concerning the relative merits of the two types of shot. There are just as many people or more in favor of chilled shot as there are champions of dropped shot, and we have found through years and years of experience that chilled shot gives better all-around performance."



**Ques.:** What types of mosses are those referred to as reindeer moss, Irish moss and long moss?

**Ans.:** None of those you mention are really mosses. Reindeer "moss" is a lichen. Irish "moss" is one of the brown algae and long "moss" is a seed plant.

**Ques.:** Can you tell me how to distinguish a crane from a heron in flight?

**Ans.:** In flight, a crane extends its neck to its full length, whereas a heron crooks its neck. The heads of both are more or less bare, but otherwise the crane's plumage is more dense and compact than that of the heron.

**Ques.:** I am a taxidermist and would like to clear with you whether it is permissible for me to mount English sparrows, starlings, blue jays, hawks and owls?

**Ans.:** Since all those birds are classified as predatory species in Virginia, they may be taken at any time by anyone with a hunting license, except where there are regulations against all hunting and you may mount them for yourself. However, if you wish to mount them for others as a professional taxidermist, then you must have a permit from the Game Commission to perform such services.

**Ques.:** Have you any publications on raising minnows for bait?

**Ans.:** The Commission does not have any such publications. However, the Fish and Wildlife Service of the U. S. Department of the Interior, Washington 25, D. C., has available two leaflets which may interest you: "Propagation of minnows and Other Bait Species" (35c) and "Fish Baits: Their Collection, Care, Preparation and Propagation." "How to Grow Minnows" (\$1.) is available from Phillip F. Allan, Regional Biologist of the Soil Conservation Service, Box 9343, Ft. Worth, Texas.

**Ques.:** Do I need a permit to keep a bear cub in captivity and, if so, how do I go about securing one?

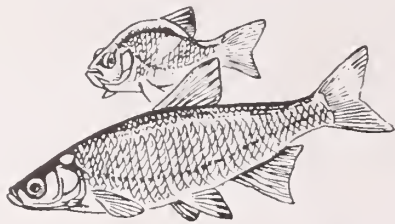
**Ans.:** It is against the policy of the Game Commission to issue permits to keep a bear in captivity for any reason. If you are now holding such an animal, you should get in touch with you local game warden and make arrangements to dispose of it immediately.

**Ques.:** Can the kiwi fly? How big are its eggs?

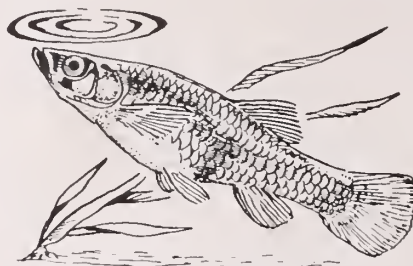
**Ans.:** No, the kiwi of New Zealand is unable to fly. It lays an egg which is one quarter of its own weight, takes 11 weeks to hatch and the chick requires three years, sometimes longer, to grow into an adult.

**Ques.:** Can non-resident children under 16 fish without a licence in Virginia?

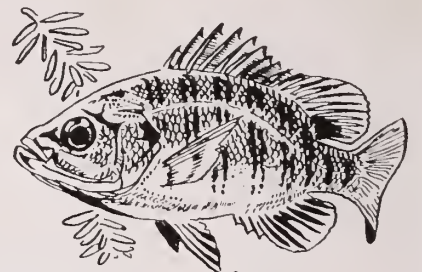
**Ans.:** No. Non-resident children under 16 must have a fishing license unless, as guests of the landowner, they fish in a private pond. Residents and non-residents alike may fish without a license in a private pond when they are guests of the owner.



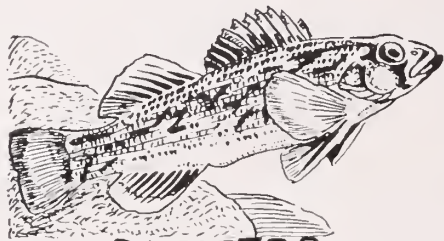
GOLDEN SHINERS



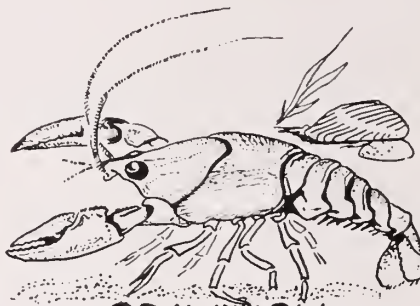
TOP MINNONS



BLUEGILL FRY



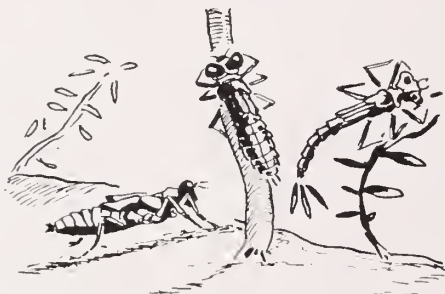
DARTERS



CRAYFISH



DRAGON FLIES



NYMPHS AND LARVAE



FROGS



SALAMANDERS



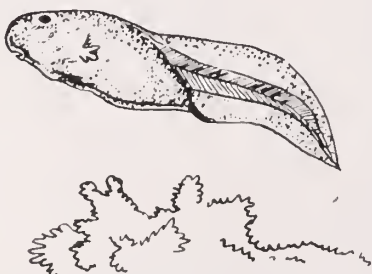
HELLGRAMMITES



MICE



BEES



TADPOLES



BEETLES

Some Common  
Bass Foods